

**WHAT IS CLAIMED IS:**

1. An isolated and purified recombinant polypeptide comprising a transit peptide domain and a cell-cycle effector domain, wherein said polypeptide is capable of entering a cell and inhibiting cell cycle progression.
2. The polypeptide of claim 1, wherein the transit peptide comprises a hydrophobic amino acid sequence or an amphipathic cationic amino acid sequence.
3. The polypeptide of claim 2, wherein the amino acid sequence comprises any one of SEQ ID NOS:7-20.
4. The polypeptide of claim 1, wherein the cell-cycle effector domain comprises a portion of a cell cycle regulatory protein.
5. The polypeptide of claim 4, wherein the cell-cycle effector domain comprises a portion of a cyclin protein.
6. An isolated polynucleotide comprising a nucleic acid encoding a polypeptide sequence as set forth in SEQ ID NO:22.
7. The polynucleotide of claim 6 wherein the polynucleotide is operably linked to a promoter.

8. The polynucleotide of claim 7, wherein the polynucleotide is part of a vector for expression of recombinant proteins in a host cell.

9. The polynucleotide of claim 8 wherein the host cell is selected from the group consisting of a cell in a transgenic animal, a cell in a transgenic plant, a yeast cell, an insect cell and a mammalian cell.

10. The polynucleotide of claim 9 wherein the host cell is a *Pichia pastoris* cell.

11. A *Pichia pastoris* cell comprising a polynucleotide sequence that encodes a polypeptide sequence as set forth in SEQ ID NO:22.

12. An isolated polynucleotide comprising a sequence set forth in SEQ ID NO:21 or 25.

13. The isolated polynucleotide of claim 12 consisting of SEQ ID NO:21.

14. The isolated polynucleotide of claim 12 consisting of SEQ ID NO:25..